

## 5.G RIO DE LAS VACAS

The Rio de las Vacas watershed is a sub-basin of the Jemez River Basin, located in northcentral New Mexico. The Jemez River Basin, approximately 1043 mi<sup>2</sup>, is dominated by both forest and rangeland (Figure 1.A) on mostly U.S. Forest Service, Tribal, and private land. The Rio de las Vacas from its confluence with the Rio Cebolla to the confluence with Rito de las Palomas, is a 123 mi<sup>2</sup> watershed. Both the study watershed and the Jemez River Basin are located primarily on U.S. Forest Service land.



Photo 10. Rio de las Vacas (NMED Lower Sampling Station 18 – Thermograph T6)

Stations were located throughout the basin to evaluate the impact of tributary streams. As a result of this monitoring effort, several exceedances of New Mexico water quality standards for total organic carbon (TOC) and temperature were documented on this segment of the Rio de las Vacas. The Rio de las Vacas is listed on the 2000-2002 §303(d) list of impaired waters for these two constituents only, and TMDL calculations can be found in Sections 9 and 12 of this document.

Table 3 gives brief descriptions of the locations of the sampling stations and shows that stations 18, 19 and 23 are on the Rio de las Vacas and will, throughout this report, be referred to as the lower, middle and upper stations on Rio de las Vacas, respectively. A subset of Table 3, for Rio de las Vacas, is shown on Table 5-7. These locations can be seen on Figure 4. No data were collected at these stations during the spring 1998 sampling effort because roads were closed due to areas of heavy snow. Stations 19 and 23 were sampled during Spring 1999.



**Table 5-7: Rio de las Vacas Station Identification**

SWQB/NMED STATION ID	STORET CODE	SWQB/NMED Thermograph Location ID	Location
18	MRG106.008505	T6	Rio de las Vacas upstream from confluence with Rio Cebolla.
19	MRG106.008515	T5	Rio de las Vacas upstream from Rancho de Chaparral Girl Scout Camp.
23	MRG106.008535	T4	Rio de las Vacas at State Highway 126.

The Rio de las Vacas above the Rio Cebolla (Station 18) showed exceedances of the TOC criterion on each of the three days of the Fall sampling effort, most likely due to decomposing deciduous vegetation. The water at this station was cold to moderately warm, well oxygenated and had low to moderate levels of dissolved constituents. This location is rather broad and shallow with little canopy cover, despite a healthy riparian area.



**Photo 11. Rio de las Vacas (NMED Upper Sampling Station 19 - Thermograph T5)**

Consequently, there were exceedances of the temperature criterion at this station as well. A thermograph was deployed at Station 18 on July 16 and retrieved September 29, 1998. A total of 1,795 temperature readings were made during this period and the thermograph location is shown in the photograph on the preceding page. The readings varied from 6.0 to 24.5°C. The average of all temperatures was 15.5°C and 218 measurements exceeded the numeric standard of 20°C.

At Station 18, the average TOC concentration for the three days during the Fall was 7.4 mg/L, which is an exceedance of the chronic criterion of 7 mg/L.

The Rio de las Vacas upstream from Rancho de Chaparral Girl Scout Camp (Station 19), shown above, was also sampled and results were similar to Station 18. There were single exceedances of temperature and TOC during the Summer run, and three exceedances of the TOC criterion in the Fall. The water varied from cold to moderately warm and was described as well-oxygenated and had low to moderate levels of dissolved constituents. A thermograph was deployed at this station as well and a total of 1,793 temperature readings were recorded. The average of all temperatures was 17.0°C, temperatures varied from 7.0 to 27.0°C, and 375 measurements exceeded the numeric temperature criterion of 20°C.

Station 23, on the Rio de las Vacas, at State Highway 126, shown below, had one TOC exceedance during the summer sampling session and three more during the fall effort. A thermograph was deployed at this station during the same time period as the other two upstream stations. Of the 1,792 readings taken, temperatures varied from 7.0 to 21.0°C, they averaged 13.4°C and only 3 measurements exceeded the numeric temperature criterion of 20°C.

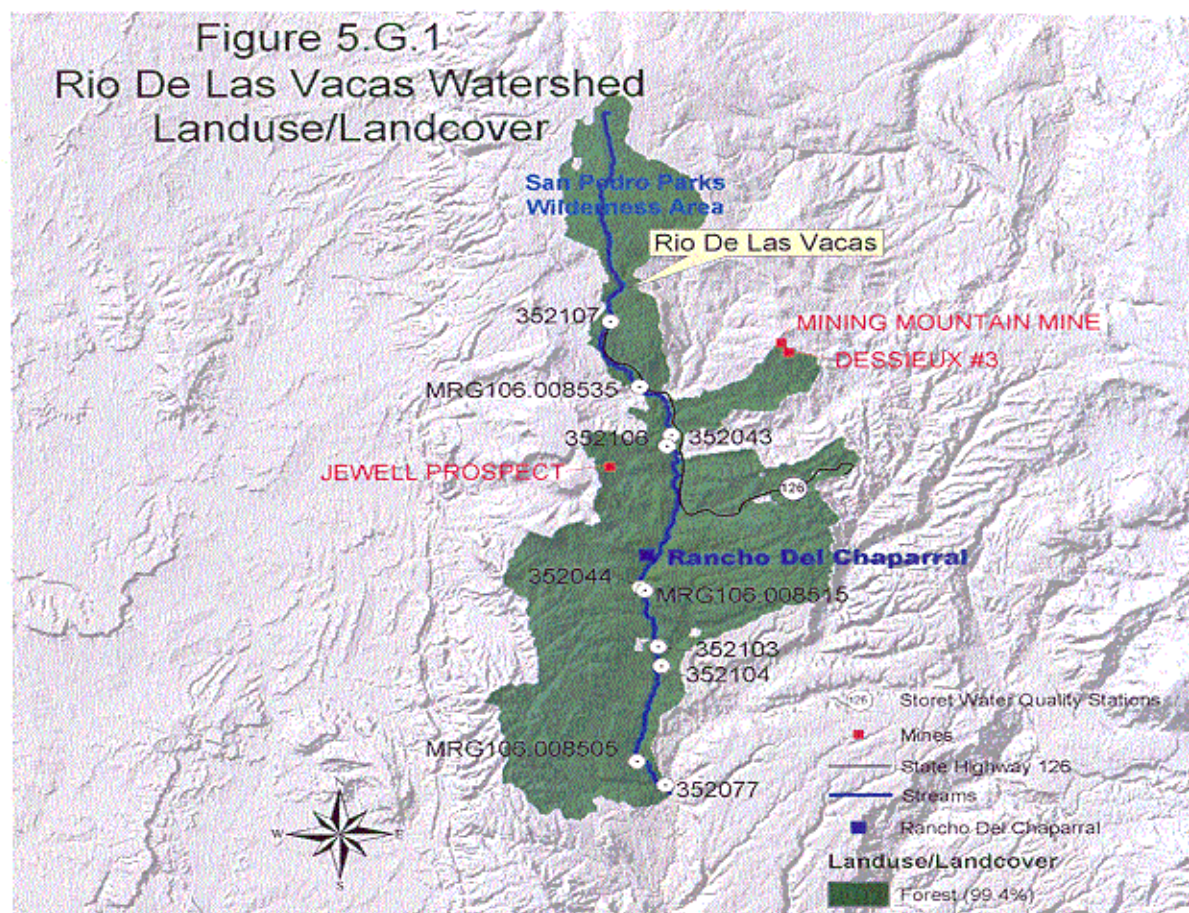


**Photo 12. Rio de las Vacas (NMED Middle Sampling Station 23 – Thermograph T4)**

As previously stated, several exceedances of New Mexico water quality standards for TOC and temperature were documented on the Rio de las Vacas (from the confluence with the Rio Cebolla to the Rito de las Palomas). TMDL calculations for the Rio de las Vacas for TOC and temperature can be found in Sections 9 and 12 of this report, respectively.



STORET STATION I.D.	NMED/SWQB STATION I.D.	LOCATION
MRG106.008505	18	Rio de las Vacas upstream from confluence with Rio Cebolla.
MRG106.008515	19	Rio de las Vacas upstream from Rancho de Chaparral Girl Scout Camp.
MRG106.008535	23	Rio de las Vacas at State Highway 126.
352106	-----	Rio de las Vacas at Admin Site
352107	-----	Rio de las Vacas at Wilderness Boundary
352103	-----	Rio de las Vacas Ojitos Bridge
352104	-----	Rio de las Vacas School Sect. Flats
352077	-----	Rio de las Vacas above Rio Guadalupe
352043	-----	Rio de las Vacas at Admin Site





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